

Ocean circulation plays a key role in distributing solar energy and maintaining climate, by moving heat from Earth's equator to the poles. At the ocean surface, currents are primarily driven by wind. Deep below the surface however, currents are controlled by water density, which depends on the temperature and salinity of the water. In a few important regions, such as the North Atlantic, sea water can get cold and salty enough to sink to great depths. This globally interconnected process of "overturning circulation" occurs in all ocean basins and helps to regulate Earth's climate. Aquarius will measure the salinity in the ocean, giving scientists the tools needed to improve predictions of future climate trends and events, like El Nino. Until now, researchers did not have a full set of data on ocean salinity and how it impacts climate change. Aquarius salinity data, combined with data from other sensors that measure sea level, rainfall, temperature, ocean color, and winds, will give us a much clearer picture of how the ocean works. Will higher temperatures intensify evaporation and alter sea surface salinity patterns? Will changes in salinity affect ocean circulation and how heat is distributed over the globe? Aquarius' measurements will provide a new perspective on the ocean, how it is linked to climate, and how it will respond to climate change.